

The Amaryllidaceæ of the Transvaal.

By R. LEENDERTZ.

INTRODUCTION.

The bulbous plants, though they have mostly showy, bright-coloured flowers, seem to have been neglected by the collectors, for in most Herbaria they are but poorly represented. It is true, the Lilies and Amaryllids with the generally big bulbs and thick leaves are difficult to preserve, and the flowers and leaves in many species appearing at a different time, the specimens are often incomplete.

The collections of Transvaal Amaryllids in the Herbaria are but small ones and the record for the Transvaal of 11 genera with 36 species is certainly too low. It will be far higher when several districts of the Transvaal, *e.g.* Zoutpansberg, visited by but very few collectors, will have been more thoroughly explored.

However, it will take some considerable time yet, until sufficient material is brought together, and for this reason I thought it advisable to commence providing some literature on the subject, however incomplete, if only to stimulate lovers and students of Botany in different outlying districts to send us more material.

Only where I had fresh material or herbarium specimens I have given descriptions of the species: for the other ones I have referred to the Flora Capensis VI. where Mr. Baker has worked out the South African Amaryllidaceæ.

Agave is included in the Transvaal genera of Amaryllidaceæ, although it is an American genus.

On account of its usefulness in forming hedges round the farms, it has been planted everywhere and is now growing wild. It thrives very well here, as its native land, Mexico, has much the same climate as South Africa.

I have followed Engler & Prantl in removing *Vellozia*, in Baker and Bentham and Hooker belonging to the family of Amaryllidaceæ, to the family of the Velloziaceæ, which has two genera, *viz.*:—

- a.* *Vellozia* with many stamens in South America;
- b.* *Barbacenia* with 6 stamens in South Africa.

According to this, *Vellozia*, our Baboon's Tail or Baviaan's-stert, must be altered into *Barbacenia*.

A list of species and many of the locality records were kindly furnished to me by J. Burt-Davy, Esq., Botanist and Agrostologist to the Transvaal Department of Agriculture, from his card-catalogue of Transvaal plants. Dr. Harry Bolus, of Kenilworth, near Capetown, was also kind enough to give me a list of localities of Transvaal Amaryllids, represented in his splendid Herbarium.

AMARYLLIDACEÆ, NARCISSUS-FAMILY.

(Fl. Cap. Vol. VI., 171.)

Flowers regular or irregular, always hermaphrodite. Perianth coloured, tubular with 6-parted limb or 6-parted to the base. Stamens 6; anthers introrse. Ovary inferior, 3-loculed: style entire: stigma entire or 3-lobed. Fruit a capsule or a berry, mostly with few seeds.

Generally stemless, bulbous plants with radical, ensiform or linear leaves and handsome, bright-coloured flowers, which are entomophilous, rarely ornithophilous.

Closely related to the Liliaceæ, but at once distinguished by the inferior ovary.

The Amaryllidaceæ are widely spread in the tropical and sub-tropical regions of both hemispheres: only few are found in temperate regions. The Cape Flora especially is rich in representatives. The bulbs of some genera are poisonous and of others are used as medicines; the leaves of a few genera supply fibre for ropes.

In the Transvaal we find till now (perhaps more may be found) 11 endemic genera with 36 species and one American genus (Agave), escaped from cultivation.

SYNOPSIS OF THE GENERA.

Subterranean part of plant a corm. Flowers in corymbs or racemes with often discoloured perianth. Fruit a capsule. Stemless plants with radical leaves.

Hypoxideæ.

Only one genus.

1. *Hypoxis.*

Subterranean part of plant a rhizome. Flowers in racemes or panicles on a very long, stout peduncle. Fruit a fleshy capsule. Stem with very short internodes and whorls of very large, thick and fleshy leaves.

Agavoideæ.

Only one genus.

2. *Agave.*

Subterranean part of plant a bulb. Flowers in umbels or solitary with coloured perianth. Fruit a capsule or a berry. Stemless plants with radical leaves.

Amaryllideæ.

Perianth tubular.

Ovary hidden in tunics of bulb neck.

3. *Apodolirion*.

Ovary free.

Bracts, surrounding the inflorescence, 2, rarely 3 or 4.

Perianth-tube long, 1-4 in.

Perianth-tube and segments of about the same length : bracts always 2, large and deltoid.

4. *Crinum*.

Perianth-tube 2 or 3 times longer than the segments : bracts 2-4, lanceolate.

5. *Cyrtanthus*.

Perianth tube short, less than 1 in. long.

Flowers solitary or 2-10 in an umbel, white or yellow.

6. *Anoiganthus*.

Flowers many in an umbel, always more than 10, rose-red or red.

Perianth irregular, large, with oblong-lanceolate segments.

7. *Brunswigia*.

Perianth regular, small, with linear segments.

8. *Buphane*.

Bracts, surrounding the inflorescence, many.

Perianth regular, segments equal, linear or lanceolate.

9. *Hæmanthus*.

Perianth irregular, segments unequal, the outer narrower than the inner.

10. *Clivia*.

Perianth cut down to the base or nearly so, segments spreading.

Stamens of different length, anthers dorsifixed.

11. *Nerine*.

Stamens of same length, anthers basifixed.

12. *Hessea*.

DESCRIPTIONS OF THE GENERA AND SPECIES.

1. HYPOXIS, L. (F.C. VI., 174.)

Perianth segments free, equal, spreading, the outer hairy on the outside as in all Transvaal species : stamens inserted at the base of the segments, filaments short, filiform, anthers linear, sagittate, basifixed or dorsifixed : ovary 3-loculed, style short, stigmata 3, free or concrete : capsule usually opening at the top : seeds round, black.—Flowers yellow, hairy outside, solitary or in racemes and corymbs : the

spread-out flowers look like yellow stars and are called, "Wilde Morgenster" and "Wilde Tulp." Leaves more or less hairy, linear, lanceolate and plicate, persistent.

The very long, tough and strong leaves of some species are used by the Kaffirs in making ropes with which they tie up the bundles of grass for the roof of their huts. Largely spread at the Cape, extending to tropical Africa, Australia and a great part of America. More than 50 known species, of which 14 occur in the Transvaal.

Key to the Species.

Perianth small, $\frac{1}{4}$ - $\frac{1}{2}$ in. long.

Leaves subterete.

Flowers one or two, corm very small, $\frac{1}{4}$ - $\frac{1}{3}$ diam.

1. *H. filiformis*.

Flowers 2-5 corymbose, corm $1\frac{1}{2}$ -2 in. diam.

2. *H. Kraussiana*.

Leaves linear.

Leaves silky.

3. *H. argentea*.

Leaves hairy, but not silky.

4. *H. Gerrardi*.

Leaves lanceolate or oblong-lanceolate.

Flowers corymbose.

Leaves membranous.

5. *H. membranacea*.

Leaves rigid.

Leaves shorter than the peduncles.

6. *H. parvifolia*.

Leaves longer than the peduncles.

7. *H. villosa*.

Flowers racemose.

8. *H. obtusa*.

Perianth larger, $\frac{1}{2}$ - $\frac{3}{4}$ in. long.

Leaves linear.

Leaves weak : peduncle single.

9. *H. acuminata*.

Leaves rigid : peduncles 2-3.

10. *H. rigidula*.

Leaves lanceolate or oblong-lanceolate.

Flowers corymbose, few.

11. *H. multiceps*.

Flowers racemose, many.

Lower pedicels very short.

Leaves nearly glabrous.

12. *H. Galpini*.

Leaves densely ciliated on the margin.

13. *H. costata*.

Lower pedicels $\frac{1}{2}$ -1 in. long, leaves glabrous or nearly glabrous above, hairy on the back and margin.

14. *H. Rooperi*.

1. *H. filiformis*, Baker. Corm very small, $\frac{1}{4}$ - $\frac{1}{3}$ in. diam. with a long neck and membranous tunics ; leaves 6, subterete, strongly ribbed, loosely hairy, 3-9 in. long, under 1 line

wide; peduncles 1-2, slender, hairy, 1-5 in. long, 1-2 flowered: perianth $\frac{1}{4}$ in. long, pale yellow, greenish and hairy outside; stamens half as long as perianth, anthers deeply sagittate; ovary densely hairy, stigmas concrete.

Saddleback Range, near Barberton, 4500-5000 ft., Galpin, 1101; Makapansgat, Zoutpansberg, in vleis, flowering September and October, Miss Leendertz, 894; Engelsche Doornboom, Pretoria District, flowering December, Janse in Transvaal Museum Herbarium, 3023; Dalriach, near Mbabane, Swazieland, Bolus, 12359.

2. *H. Kraussiana*, *Buch.* (F.C. VI., p. 180, No. 14.) Johannesburg, Galpin, 6177; Swazieland, Galpin, 984.

3. *H. argentea*, *Harv.* Corm ovoid with a long neck, crowned with a ring of bristles; leaves 6-12, linear, acuminate, firm in texture, 4-6 in. long, 1-1 $\frac{1}{2}$ line wide, densely silky with long hairs on both sides; peduncles 2, slender, densely silky, shorter than the leaves; flowers 2, corymbose, pedicels hairy, $\frac{1}{2}$ in. or more long, bracts small, narrow; perianth-segments $\frac{1}{4}$ in. long, the outer ones densely hairy; stamens very short, anthers deeply sagittate; ovary silky, stigmata concrete.

Pretoria, flowering in November, common in good soil and stony places, Burt-Davy, 716; plains round Pretoria, 4000 ft., Bolus, 176; Irene, flowering October, Miss Leendertz, 916.

Var. flaccida, *Baker.* (F.C. VI., 182, var.)

4. *H. Gerrardi*, *Baker.* Corm oblong, 2 in. long, $\frac{1}{2}$ in. diam., crowned with many long bristles and with a long neck; leaves 6-10 linear, rigid, strongly ribbed, 4 in. long at the flowering time, 1 line wide, short and softly pilose all over; peduncles 2 or 3, slender, hairy, longer than the leaves; flowers 2-4, pedicels densely hairy, $\frac{1}{2}$ in. long, bracts small, linear; perianth-segments $\frac{1}{4}$ - $\frac{1}{3}$ in. long, the outer ones densely hairy on the back; stamens short; ovary densely pilose.

Koedoespoort, near Pretoria, Miss Leendertz, 645; without precise locality, McLea in Herb., Bolus, 12594.

5. *H. membranacea*, *Baker.* Corm very small with a long neck; leaves 4-8, oblong-lanceolate, membranous, 1-3 in. long, $\frac{1}{2}$ wide at the middle, thinly hairy with long, soft hairs; peduncles 1-2, very slender, hairy, two-flowered, pedicels as long as the peduncle; perianth $\frac{1}{4}$ in. long, whitish-yellow, hairy on the outside; stamens nearly as long as the perianth-segments; ovary hairy.

Swazieland, Galpin, 1049.

6. *H. parvifolia*, *Baker.* Corm oblong, $\frac{1}{2}$ in. diam., crowned with a dense ring of bristles; leaves 4-8, oblong-lanceolate, firm, strongly ribbed, slightly hairy, 1-2, in. long;

peduncles 3-4, very hairy with long white or yellowish hairs, 2-3 in. long, inflorescence included, two-flowered; bracts lanceolate, longer than the pedicels; perianth pale yellow, densely hairy on the back; stamens half as long as the perianth-segments or shorter; ovary very hairy.

Summit of Saddleback Range, near Barberton, 5000 ft., Galpin, 1059; Kopjes round Pretoria, flowering October, Miss Leendertz, 312; Irene, Miss Leendertz, 917.

7. *H. villosa*, L. (F.C. VI., 184, No. 27.) The variety var. *obliqua*, Jacq., occurs at Barberton, 2900 ft., Thorncroft, 43.

8. *H. obtusa*, Burch. (F.C. VI., 184, No. 28.) Saddleback Range, near Barberton, 3200-4500 ft., Galpin, 412; Johannesburg, Galpin, 6073.

9. *H. acuminata*, Baker. (F.C. VI., 186, No. 32.) Houtbosch, Pietersburg, Bolus, 11174.

10. *H. rigidula*, Baker. Corm oblong; leaves 5-6, very rigid, strongly ribbed, shortly pilose, 1-1½ ft. long, ¼-½ in. wide; peduncles 2-3, flattened, hairy, very long when the plant is in fruit; flowers 3-8, racemose, pedicels very short; bracts linear, ½-1 in. long; perianth nearly ¾ in. long, the segments densely pilose on the back; filaments short; capsule densely pilose, opening at the top.

Flowering time, February and March.

Wonderfontein, Nelson, 261; Davel, Burt-Davy, 1657; Vlakfontein, Rogers in Transvaal Museum Herb., 2342.

Var. pilosissima, Baker. Leaves, peduncles and perianth covered with denser, longer hairs. Flowering time, October, November and December; used for ropes by the Kaffirs.

Pretoria, Magaliesberg, Burke, 156; Kopjes round Pretoria, Miss Leendertz, 313; Barberton, Galpin, 1099; Warmbaths, Burt-Davy, 2218; Zoutpansberg, Waterval-Boven.

11. *H. multiceps*, Buch. (F.C. VI., 187, No. 35.) Barberton, 4500 ft., Galpin, 1058.

12. *H. Galpini*, Baker. (F.C. VI., 188, No. 40.) Saddleback Range, near Barberton, 4000-5000 ft., Galpin, 1098.

13. *H. costata*, Baker. Corm globose with many strong bristles; leaves 5-10, oblong-lanceolate, rigid, closely ribbed, 5-8 in. long at the flowering time, 1-1½ in. wide at the middle, densely ciliated with long hairs on margins and midrib beneath, otherwise glabrous; peduncles 1-4, as long or longer than the leaves, densely hairy; flowers few in a raceme, bracts linear; perianth-segments very hairy on the back; filaments short; ovary densely hairy.

Flowering time, January.

Oshoek, Wakkerstroom District, Devenish in Col. Herb., 54.

14. *H. Rooperi*, Moore. Corm globose, 2-4 in. diam., with many fleshy rootlets, crowned with a dense ring of black bristles : leaves 12-18 or more, equitant in 3 ranks, lorate, acuminate, $\frac{1}{2}$ -1 ft. long at the flowering time, 1-2 in. wide in the lower half, rather firm in texture, glabrous or nearly so above, shortly hairy on the back and margin ; peduncles 2-9, flattened, hairy upwards, 3-12 in. long ; flowers 4-10, racemose ; bracts linear, as long or longer than the pedicels : perianth-segments oblong, yellow, $\frac{3}{4}$ in. long, the outer hairy on the back ; anthers longer than the filaments ; ovary very hairy ; stigmata concrete ; capsule densely hairy, opening at the top, seeds black, shining.

Flowering September, October, November.

Potchefstroom District, Mooi River, Nelson, 302 ; Houtbosch, Rehmann, 5810 ; Barberton, 1800-2600 ft., Galpin, 1190 ; without precise locality McLea in Herb. Bolus, 5801 ; Zoutpansberg ; common round Pretoria, Miss Leendertz, 274 ; Irene, Miss Leendertz, 919.

2. AGAVE. L.

Perianth regular, funnel-shaped with a short or long tube, segments straight or spreading, linear ; stamens longer than the perianth, filaments filiform, anthers dorsifixed ; ovary oblong, stigma slightly three-lobed ; fruit a capsule ; seeds flattened.—Plants with fleshy, thick leaves, prickly on the margin, or with thin and entire leaves, often glaucous ; flowers yellowish or greenish, in panicles or spikes. The plants grow very slowly and it generally takes a very long time before they flower.

An American genus with 50 species in Mexico, South America and the Southern parts of North America. Many are in cultivation : escaped from it and occurring everywhere in the Transvaal, is :—

A. americana, L. Leaves in a dense rosette, very large and thick, with sharp prickles on the margin, glabrous and glaucous ; peduncle 1, very long and stout, covered with bracteiform leaves and ending in an enormous panicle of yellowish-green flowers.

A native of Mexico, very important on account of its usefulness as a fibre-plant (false Manilahemp), spread over all tropical and sub-tropical regions. Known in the Transvaal under the names of "Aloe" and "Garenhout" and used as a hedge plant and as fodder for cattle in times of drought.

3. APODOLIRION, BAKER. (F.C. VI., 197.)

Perianth with a long tube and lanceolate segments ; stamens in two rows, 3 inserted at the throat and 3 below the throat of the perianth-tube, filaments very short, anthers

basifixed; ovary hidden in the upper sheaths of the bulb. Small plants with the habit of Saffron and Meadow-saffron and white or red solitary flowers; leaves linear, generally produced after the flowers.

A South African genus with 4 species, of which 2 occur in the Transvaal.

Key to the Species.

Perianth-tube 1-1½ in. long. 1. *A. Elta*.
Perianth-tube 6-8 in. long. 2. *A. Mackenii*.

1. *A. Elta*, *Baker*. (F.C. VI., 197, No. 2.) Barberton, 4000-5000 ft., Galpin, 436.

2. *A. Mackenii*, *Baker*. (F.C. VI., 198, No. 6.) Schlechter, 3327, Houtboschrand, is near this species.

4. CRINUM, L. (F.C. VI., 198.)

Perianth funnel-shaped, tube very long, segments oblong, generally as long as the tube; stamens inserted at the throat of the tube, filaments long, filiform, anthers linear, dorsifixed; ovary oblong, ovules often sunk down in the thick placenta, style long, filiform, stigma round; capsule membranous, bursting irregularly; seeds large, bulbiform.

Plants with large, showy flowers, white, or white, tinged with red in many- or few-flowered umbels; bracts large, 2; leaves long, linear or lorate, produced with the flowers. The bulbs of many species are used as medicines.

A genus with over 60 species, spread through the tropical and sub-tropical regions of the Old and New Worlds, growing mostly near the coasts.

One species occurs in the Transvaal, known under the name of St. Johns Lily.

1. *Cr. longifolium*, *Thunb.* Bulb very large, ovoid; leaves many, lorate, green, rather firm in texture, more than a foot long at the flowering time, 2-2½ in. wide, scabrous on the margin; peduncle flattened, nearly 1 ft. long; flowers 6-12 or more to an umbel; bracts 5 in. long, 1½ in. wide at the middle; pedicels short; perianth curved, white with red stripes; stamens shorter than perianth-segments or nearly as long; filaments filiform, white; style filiform, nearly as long as perianth-segments; capsule membranous, seeds 1-6, bulbiform, germinating when still in the capsule.

The most extensively cultivated species of the genus, often found in European gardens.

Common near Pretoria, flowering October and November, Miss Leendertz, 964; MacLea in Herb. Bolus, 5941; Rustenburg, Miss Nation, 356; Wakkerstroom District; Heidelberg.

Cr. pauciflorum, Baker, is given in Durand & Schinz "Conspectus Floræ Africae" as a Transvaal species, but having neither description nor specimens of it, we must leave it for the present.

NOTE.—The capsule is given in Baker and Bentham and Hooker as few-seeded; in Engler and Prantl as many-seeded.

In the specimens I have examined the capsule is 1-6 seeded. The plant is viviparous, for the seeds germinate within the capsule, the roots piercing the fruit wall.

5. CYRTANTHUS, AIT. (F.C. VI., 218.)

Perianth funnel-shaped with a narrow tube, much longer than the segments, dilated gradually upwards to the throat, segments oblong, nearly equal; stamens inserted in the tube, filaments filiform, long or short, anthers dorsifixed, ovary 3-loculed, style long, filiform, stigma more or less 3-lobed, capsule many-seeded, seeds flattened, black.

Plants with pendulous or erect, usually white or red flowers, solitary or in few- or many-flowered umbels, surrounded by 2-4 greenish, lanceolate bracts; leaves linear or lorate, produced with or after the flowers. The genus takes its name from the curvature of its flower.

A species with white flowers is called the Ifafa-Lily. A South African genus with 15 known species, of which 5 occur in the Transvaal.

Key to the Species.

Flowers yellow.

1. *C. lutescens*.

Flowers bright red.

Umbel many-flowered, 4-10 in an umbel.

Perianth 1-1½ in. long.

2. *C. parviflorus*.

Perianth 1½-2 in. long.

3. *C. angustifolius*.

Umbel few flowered, 2-3 fl. in an umbel, or flower solitary.

Flowers always single, leaves linear.

4. *C. Galpini*.

Flowers single or 2-3 umbellate; leaves lanceolate, petiolated.

5. *C. sanguineus*.

1. *C. lutescens*, Herb. (F. C. VI., 225, No. 17.) Barberton, 5000-5500 ft., Galpin, 654, and without precise locality, Sanderson.

2. *C. parviflorus*, Baker. Bulb small; leaves linear, flaccid, more than 1 ft. long; peduncle slender, ½ ft. long; umbel 10 flowered, bracts two, lanceolate, 1½ in. long; pedicels ½-1 in. long; perianth bright red, slightly curved, 1 in. long; segments not spreading, short, broad oblong; stamens 3, inserted at the throat of the tube, 3 within, filaments very short; style nearly reaching to the tip of the perianth-segments.

Saddleback Range near Barberton 4000-4500 ft., Galpin, 477; Barberton, flowering September, J. N. Thornercroft, 2757 in Transvaal Museum Herb.; between Mbabane and Bremersdorp, Swazieland, Bolus, 12362.

3. *C. angustifolius*, Ait. (F.C. VI., 223, No. 14). Hills near Barberton, 4000 ft. Thornercroft, 156; Ermelo, flowering October; without precise locality, Sanderson.

4. *C. Galpini*, Baker. (F.C. VI., 227, No. 24.) Barberton, rocky hill sides, 3000 ft., Galpin, 409.

5. *C. sanguineus*, Hook. (F.C. VI., 227, No. 23.) Barberton, among rocks, 3000 ft. Thornercroft, 157.

6. ANOIGANTHUS, BAKER. (F.C. VI., 193.)

Perianth with a short tube and lanceolate, ascending segments; stamens in 2 rows, 3 inserted in the tube and 3 at its throat; filaments filiform, anthers basifixed, deeply sagittate; ovary many-ovuled, style filiform, stigma 3-lobed; capsule many-seeded; seeds flat.—Plants with the habit of the snowdrop and white or yellow flowers; leaves linear, produced with the flowers.

A South African genus with one species and a variety of it, both occurring in the Transvaal.

1. *A. breviflorus*, Baker. (F.C. VI., p. 193, No. 1.) Swazieland, 4000 ft., Galpin, 1097, Hlatikulu, Swazieland, Miss Stewart in Herbarium Bolus.

1A. *Var. minor*, Baker. A dwarf plant: bulb $\frac{1}{2}$ in. diam. with a rather long neck and membranous, white tunics; leaves 3-5, linear, erect, obtuse, glabrous, 2-5 in. long, 1-1 $\frac{1}{2}$ line wide; peduncle 1-1 $\frac{1}{2}$ in. long; pedicels $\frac{1}{2}$ -1 in. long; bracts 2, linear, acuminate, longer than the pedicels; flowers 1-3, pale yellow, with narrow perianth-segments; stamens half as long as perianth-segments; style longer, ovary small, globose, green.

Johannesburg, Galpin, 6178; Zwartkrans, Zoutpansberg, in vleis, flowering September, Miss Leendertz, 890; Brugspruit, flowering October, in Transvaal Museum Herb. 3428.

7. BRUNSWIGIA, HEIST. (F.C. VI., 204.)

Perianth curved with a short tube and narrow, oblanceolate segments; stamens inserted in the tube, more or less curved, three shorter, filaments filiform, anthers dorsifixed; ovary turbinate, style filiform, curved; capsule acutely triangular, narrowed gradually into the long pedicel; seeds roundish.—Plants with large bulbs and bright red, arge and showy flowers in many-flowered umbels; leaves

mostly broad, lying nearly on the ground. Flowers generally very long-stalked, from which peculiarity the vernacular name of "Candelabra Flower" is derived.

A South African genus with 9 known species, of which one occurs in the Transvaal.

1. *B. Cooperi*, Baker. Bulb large, ovoid, with pale brown, membranous tunics; leaves 4-6, lingulate, spreading almost horizontally, 9 in. long, 4 in. wide at the middle, thick, many and closely veined, margin thickened and scabrous; peduncle round, a foot or more long; flowers many in an umbel, bright red, pedicels 3-4 in. long; bracts two, ovate, nearly 2 in. long; perianth 2-2½ in. long; stamens as long as perianth-segments; style a little longer.

Barberton, Galpin, 1222; Nelspruit, Rogers, in Transvaal Museum Herbarium, 2276; Belfast, Bolus, 12365.

8. BUPHANE, HERB. (F.C. VI., 242.)

Perianth regular with short, straight tube; segments narrow, spreading, linear or lanceolate; stamens inserted at the throat of the tube, filaments long, filiform, anthers dorsifixed; ovary turbinate, ovules few, round, style filiform, stigma slightly three-lobed, capsule membranous, indehiscent, seeds few, bulbiform.—Plants with large bulbs and rose-red or dark red, small flowers in very dense umbels; leaves many, lorate or lingulate, firm in texture, appearing after the flowers.

A South African genus with few species, of which one occurs in the Transvaal, extending to Tropical Africa.

1. *B. toxicaria*, Thunb. "Poison bulb" or "Giftbol". Bulb very large, 6-8 in. diam. with many hundreds of tunics, the outer, brown, firm in texture; leaves appearing after the flowers, ensiform, distichous, firm, bluish-green, closely ribbed, acuminate, hairy on the margin, 1-1½ ft. long, 1-1¼ in. wide; peduncle short, stout, flattened; bracts deltoid, longer than the pedicels, perianth dark red, segments linear, reflexed; filaments red, longer than the segments, anthers yellow, dorsifixed; ovary turbinate, tapering gradually into the angular pedicels, style red, nearly as long as the stamens.

The inflorescence in fruit is called the "Windwaaier", consisting of very many triangular capsules on very long stalks, the pedicels having grown out to six times their length. Seeds in a capsule 3 or less, white, bulbiform. The seed germinates in the closed capsule, the young root breaks through the thin fruitwall and gradually the first leaves to appear through the opening, which becomes larger, thus giving opportunity to the young plant to become free and to grow on,

where it finds a good condition to thrive. The Windwaaier does not remain long connected with the plant, but breaks off, is caught by the wind, it being very light, rolls over the ground, in this way serving for the distribution of the young plants.

“Buphae” is the Greek name for “death to cattle”.

Horned cattle are very fond of the leaves, but are said to prove fatal when eaten by them. With the sap of the bulb the Hottentots are said to poison their arrows.

The plant flowers in October on sunny spots on the Kopjes round Pretoria : Miss Leendertz, 351.

NOTE.—I have not found it mentioned in any book that Buphae is viviparous, nor that the fruit is indehiscent.

I collected a “Windwaaier” in November and soon I saw the first roots break through the membranous fruitwall, followed by the green leaves.

As far as May I saw the germinating of the large bulbous seeds, tender young roots and green leaves hanging out from the pierced capsule.

9. HAEMANTHUS, L. (F. C. VI., 229.)

Perianth straight, erect with a short tube, segments longer than the tube, linear or lanceolate, spreading or ascending; stamens inserted at the throat of the tube, filaments filiform, often longer than the segments, anthers dorsifixed: ovary 3-loculed, style filiform, stigma slightly 3-lobed: berry globose, often bright coloured, seeds few, round.

Plants with red or white, small flowers in dense capitate umbels, surrounded by many erect or spreading, often coloured bracts: leaves mostly thick and fleshy, broad and obtuse, produced with or after the flowers. The bulb has sharp qualities and is often used as a household medicine. Many species are in cultivation on account of the showy flowers.

A South African genus with 50-60 species at the Cape, extending into tropical Africa: 6 species occur in the Transvaal.

Key to the Species.

Leaves membranous.

Bracts and perianth segments spreading; flowers bright red. 1. *H. Katharinae*.

Bracts and perianth-segments persistently ascending.

Leaves distinctly petiolated; flowers pale scarlet.

2. *H. puniceus*.

Leaves not petiolated; flowers bright red.

3. *H. magnificus*.

Leaves thick and fleshy.

Bracts white, veined with green, flowers pure white.

4. *H. albiflos*.

Bracts reddish ; flowers pink or white.

Bracts and perianth-segments spreading.

5. *H. amarylloides*.

Bracts and perianth-segments permanently ascending.

6. *H. hirsutus*.

1. *H. Katharinae*, *Baker*. Bulb globose : leaves 3-5, produced with the flowers, oblong, membranous, bright green, distinctly many veined, petiolated, lamina 6 in. long and 2-3 in. wide, petiole 3 in. long, spotted ; leafy stem short ; peduncle distinct from the leaves, spotted low down, long ; umbel globose, 6 in. in diam. ; pedicels 1 in. long ; bracts 5-6, lanceolate, thin, reflexed ; perianth bright red, segments lanceolate, narrow, reflexing ; filaments flattened, ascending, bright red, longer than the perianth-segments, anthers yellow ; ovary round, green, style ascending, longer than the filaments.

Barberton, stony ground at base of hills, 2000 ft., Galpin, 711.

2. *H. puniceus*, *L.* (F. C. VI., 231. No. 2.) Barberton, Galpin, 673.

3. *H. magnificus*, *Herb.* Bulb globose, 2½-3 in. diam. with many long, very fleshy rootlets : leafy stem spotted with red brown, 5-6 in. long at the flowering time ; leaves 6-8, oblong, membranous, bright green, undulated, distinctly many-veined, transverse veinlets close and oblique, 12-15 in. long, 3-5 in. wide, narrowed to a clasping base : peduncle lateral, stout, about a foot long ; umbel globose, very dense, large ; bracts 6-8, oblong, ascending, 2-2½ in. long, greenish, reddish to dark red, shorter, as long or overtopping the flowers ; perianth bright red, segments twice as long as tube ; filaments bright red, longer than the perianth, anthers yellow ; style as long as stamens ; berry bright red, as big as a small cherry.

Common round Pretoria, Miss Leendertz, 650 ; Irene, Miss Leendertz, 920 ; Rietfontein (Zoutpansberg), Miss Leendertz, 871. Flowering time, October and November.

The vernacular name is "Oogzeer-bloem".

NOTE.—The mostly bright-coloured Amaryllids, often standing in dense inflorescences, are of course entomophilous, but nowhere have I found anything about their being ornithophilous. In a kloof at Rietfontein, Zoutpansberg, I saw the above described *Hemantus* visited by a Sun-Bird. The bird placed itself upon the middle of the umbel and turning round and round, it sucked the honey from out the flowers.

4. *H. albiflos*, *Jacq.* (F.C. VI., 235, No. 11.) A variety at Barberton, Moodies, 4000 ft., Thorncroft, 361.

5. *H. amarylloides*, Jacq. Bulb ovoid, ; leaves two, produced with the flowers, lingulate, obtuse, bright green, glabrous, 6-12 in. long, 1½-2 in. wide ; peduncle slender, glabrous, ½ ft. long ; flowers in a dense globose umbel, 50 or more ; bracts 6, pink, oblong-lanceolate, spreading ; perianth white, segments lanceolate, tube very short ; stamens and style nearly as long as perianth-segments ; berry oblong, blackish.

Mooi Rivier, Burke ; Wolmaransstad, flowering December, Mainwaring, in Transvaal Museum Herbarium, 2794.

6. *H. hirsutus*, Baker. Bulb rather large ; leaves 2, produced with the leaves, oblong, 5-6 in. long at the flowering time, 3½-4 in. wide, nearly erect, very obtuse, shortly hairy on both surfaces, pale beneath, the hairs on the margin longer ; peduncle longer than the leaves, densely and softly hairy ; umbel globose ; bract 6-8, oblong, membranous, bright red, ascending or spreading ; perianth white or pink, segments very narrow, lanceolate, obtuse, much longer than the tube ; filaments white, anthers small, pale yellow ; ovary green, style as long as the stamens.

Barberton, 4000-5000 ft. Galpin, 1183 ; Ermelo, flowering December, Burtt-Davy, 2191.

10. CLIVIA, LINDL. (F.C. VI., 228.)

Perianth funnel-shaped with short tube, curved or straight, segments much longer than the tube, the three outer narrower than the 3 inner ; stamens inserted at the throat of the tube, filaments filiform, nearly as long as the perianth-segments, anthers dorsifixed ; ovary round, 3-loculed, style long, filiform, stigma 3-lobed ; berry bright red, pulpy, seeds few, large, bulbiform.—Plants with showy, red-yellow flowers and therefore frequently grown in gardens ; leaves many, lorate, distichous, fully developed, when the plant flowers ; bulb imperfect, rootlets numerous, thick, fleshy.

A South African genus with 3 species of which 2 occur in the Transvaal.

Key to the Species.

Umbel dense, 40-60 flowered : leaves not narrowed to the tip, obtuse. 1. *C. nobilis*.

Umbel less dense, 12-20 flowered, leaves narrowed gradually to the tip. 2. *C. Gardeni*.

1. *C. nobilis*, Lindl. (F.C. VI., 228, No. 1.) Barberton, 4000-4650 ft. Galpin, 1102.

2. *C. Gardeni*, Hook. (F.C. VI., 228, No. 2.) Barberton, Saddleback Mountains, Thorneroft, 280 ; Transvaal, Hort. Nelson.

11. NERINE, HERB. (F.C. VI., 209.)

Perianth regular or irregular with narrow, more or less crisped, spreading segments: stamens inserted at the base of the segments; filaments thickened at the base and often united, three shorter, anthers dorsifixed; ovary 3-loculed, few ovuled, style filiform, stigma slightly 3-lobed; capsule deeply 3-lobed: seeds globose, one or few in a cell.—Flowers red or rose-red in few- or many-flowered umbels: bracts 2, lanceolate, leaves linear, produced with or after the flowers.

A South African genus with 9 species at the Cape and 3 in the Transvaal: many are in cultivation on account of the showy flowers. *Nerine sarniensis*, the Guernsey Lily, is, notwithstanding its name, a native of Table Mountain. It is said it obtained the name in this way. In 1680 a ship wrecked on the shore of Guernsey, and having quantities of bulbs of *N. sarniensis* on boardship, these were thrown ashore and became cultivated on the Isle.

Key to the Species.

Peduncle long, 1½-3 ft. long.

Leaves 1 in. wide.

1. *N. flexuosa*.

Leaves ⅜-¼ in. wide.

2. *N. angustifolia*.

Peduncle short, 3-8 in. long.

3. *N. lucida*.

1. *N. flexuosa*, *Herb. var. Sandersoni*, Baker. (F.C. VI., 211, No. 4, var.) Barberton, Moodies, 4000 ft., near streams, Thorncroft, 444; without precise locality, Sanderson.

2. *N. angustifolia*, Baker. Bulb small: leaves linear, 1 ft. long, ⅜-¼ in. wide, appearing with the flowers: peduncle stiff, erect, long: umbel many-flowered, bracts ovate-lanceolate, coloured; pedicels very hairy: perianth-segments pink, scarcely at all crisped: stamens shorter than the perianth-segments: ovary hairy, style as long as the stamens.

Sterk Hill, Lydenburg, flowering in June, growing in boggy ground on shady spots, Burt-Davy, 453; Barberton, Galpin, 1018; Dalriach, Swaziland, Bolus, 12366.

3. *N. lucida*, *Herb.* (F.C. VI., 214, No. 13.) Without precise locality, Todd, 22.

12. HESSEA, HERB. (F.C. VI., 189.)

Perianth regular with spreading, obtuse segments: stamens inserted at the base of the segments, filaments filiform or flattened at the base, anthers small, basifixed: ovary globose, style subulate or swollen towards the base;

capsule few-seeded: seeds round, greenish.—Small plants with white or rosy, small flowers in many-flowered umbels, surrounded by two linear or lanceolate bracts: leaves linear, filiform or lorate, generally produced after the flowers.

The generic name is given in honour of the late Rev. Mr. Hesse, minister of the Lutheran congregation at Capetown.

A South African genus with 10 species at the Cape Colony and one in the Transvaal.

1. *H. Rehmanni*, *Baker*. (F.C. VI., 190, No. 4.)
Donkershoek, Rehmann, 6549: Johannesburg, Miss Saunders,
13, Galpin, 1370.